

*Application No. 10/644550*  
*Page 2*

*Amendment*  
*Attorney Docket No. S63.2H-12015-US01*

**Amendments To The Specification:**

*Please amend the second paragraph on page 1 as follows:*

[0002] The present application is a continuation-in-part of ~~ee-pending~~ now abandoned U.S. Patent Application No. 09/668,687, filed September 22, 2000, which is was a continuation-in-part of U.S. Patent Application No. 09/326,445, filed June 4, 1999, which issued as U.S. Patent No. 6,325,826. The present application is also a continuation-in-part of U.S. Patent Application No. 10/440,401, filed May 19, 2003 which is a continuation of U.S. Patent Application No. 09/750,372, filed December 27, 2000, which issued as U.S. Patent No. 6,599,316. The present application is also a continuation-in-part of U.S. Patent Application No. 09/963,114, filed September 24, 2001, which issued as U.S. Patent No. 6,706,062, and which is a continuation of U.S. Patent Application No. 09/326,445. U.S. Patent Application No. 09/326,445 is continuation-in-part of PCT Application No. US99/00835, filed January 13, 1999, which claims the benefit of U.S. Patent Application No. 09/007,265, filed January 14, 1998, which issued as U.S. Patent No. 6,210,429, which is a continuation-in-part of now abandoned U.S. Patent Application No. 08/744,002, filed November 4, 1996. The entire contents of all of the above references are incorporated herein by reference.

*Please amend the last paragraph on page 8 and the first paragraph on page 9 as follows:*

[0047] FIG. 5 shows stent 12 in an unexpanded state in a flattened elevational view. As shown in FIG. 5, stent body 14 has a generally cellular configuration and comprises a generally repeatable series of struts 24 and connectors 26 configured in a predetermined general, overall, or main pattern along the length of stent 12. Struts 24 comprise a pair of longitudinal strut portions 25 joined by a curved portion 27 at the proximal ends. Struts 24 are interconnected by curved portion 29 at the distal ends and formed into rings 28 that extend about the circumference of stent 12. A series of the circumferential rings 28 are spaced apart from one another longitudinally along the entire length of stent 12, and connectors 26 connect rings 28 to each other longitudinally. Connectors 26 extend generally longitudinally between adjacent circumferential rings 28 and connect to the respective curved portions ~~25~~ 27, 29 of longitudinally adjacent struts 24 of adjacent rings 28. In a preferred embodiment, connectors 26 are generally S-shaped or

*Application No. 10/644550*  
*Page 3*

*Amendment*  
*Attorney Docket No. S63.2H-12015-US01*

zigzag-shaped, although other patterns may also be used. Details of patterns that may be used for stent 12 are described more fully in co-pending PCT application IL02/00840, filed October 20, 2002, incorporated herein by reference in its entirety. Furthermore, many other strut and connector patterns may be used, and the present pattern is shown for illustration purposes only.

*Please amend the last paragraph on page 13 and the first paragraph on page 14 as follows:*

[0057] Referring now to FIGS. 14 and 15, another embodiment of stent 49 is shown having a stent body 14 that has a longitudinal section 53 that has a different pattern than main pattern 54. Longitudinal section 53 comprises a generally repeatable series of struts 56 and connectors 58 that are smaller in dimension than struts 24 and connectors 26, but are formed into a similar geometrical pattern as main pattern 54. In this regard, the struts 56 are more numerous per area within rings 28, and rings 28 are more numerous per area in section 53 because the length of struts 56 is shorter than the length of struts 24 and the length of connectors 58 is shorter than the length of connectors 26. In a preferred embodiment, the same number of connectors 58 extend between adjacent rings 28; however, because the struts are more numerous in longitudinal section 53, connectors 58 extend longitudinally between every other strut of adjacent rings 28. As shown in FIG. 15, stent 49 further includes a branch portion 30 positioned within section 53. Branch portion 30 comprises a branch ring 32 adjacent an opening 34. Opening 34 is formed by an absence of at least one connector 26 ~~58~~ adjoining branch ring 32 with branch opposing ring 33. In a preferred embodiment, two adjacent connectors are absent; however, in alternate embodiments any number of connectors may be absent to create opening 34. In this embodiment, branch ring 32 is substantially similar geometrically to circumferential rings 28 and comprises branch ring struts 36 substantially similar to struts 56; however, a plurality of adjacent struts are free from a connectors 58 adjacent opening 34 and branch ring 32 is at least partially detachable from stent body 14 at opening 34 to facilitate at least a portion of branch ring 32 to extend outwardly with respect to stent body 14. The generally smaller struts and connectors of longitudinal section 53 provide for freer movement of the strut and connector material and facilitate conformance to a vessel wall. The smaller struts and connectors also provide for a relatively more dense surface area coverage of the branch vessel wall, which may be advantageous in achieving a more uniform coverage around the ostium. In particular, this

*Application No. 10/644550*  
*Page 4*

*Amendment*  
*Attorney Docket No. S63.2H-12015-US01*

embodiment may provide particularly advantageous coverage of a geometrically complex obstruction in a bifurcation vessel since the relatively small pattern may flex or contour around the obstruction and provide coverage therefor. Also, this embodiment is advantageous for relatively small obstructions as the smaller pattern may cover more surface area of obstruction.

*Please amend the third paragraph on page 15 as follows:*

[0060] In this embodiment, when stent 69 is expanded, as shown in FIG. 18, branch portion 30 is extended into the branch vessel, causing expandable ring ~~74~~ 72 to at least partially cover the inner surface of the branch vessel. Thus, in a preferred embodiment, the stent coverage in a portion the branch vessel includes the full circumference of the inner branch vessel wall. In alternative embodiments, partial coverage or several sections of coverage are present.

*Please amend the second paragraph on page 18 as follows:*

[0066] Referring now to FIG. 22, another embodiment of a stent 89 is shown having a main stent body 14 and another embodiment of a branch portion 30. Stent 89 is substantially similar to stent 79, except stent 89 has a discontinuous support member 104 surrounding a two concentric ring 86, 88 structure. Support member 104 has a generally elliptical shape and includes a plurality of discontinuities 106 along the perimeter. The configuration of the discontinuous support member facilitates additional flexibility of the branch portion during expansion and generally provides for accommodating a greater range of branch vessel geometries. In one aspect of a preferred embodiment, structural support member ~~84~~ 104 may be elliptical to accommodate branch vessels extending at an angle to the main vessel.

*Please amend the third paragraph on page 18 as follows:*

[0067] Referring to FIGS. 23 and 24, another embodiment of a stent 99 is shown in the unexpanded and expanded states, respectively. Stent 99 comprises a main stent body 14 and another embodiment of a branch portion 30. Stent 99 is substantially similar to stent 79, except stent 99 has a branch portion 30 including a support member 108 surrounding three concentric rings: a first ring 110, a second ring 112, and a third ring 114 instead of two. First ring 114 is connected to the support member 108 by an outer or first connector 92. The first ring 114

*Application No. 10/644550*  
*Page 5*

*Amendment*  
*Attorney Docket No. S63.2H-12015-US01*

defines a complete circuit which extends without interruption from the first side or clockwise side 92' of the first connector to the second side or counterclockwise side 92'' of the first connector 92. The second ring 112 is connected to the first ring 114 by an inner or second connector 90. As with the first ring 114, the second ring 112 defines a complete circuit which extends without interruption from the first side or clockwise side 90' of the second connector 90 to the second side or counterclockwise side 90'' of the second connector 90. As can be seen in FIG. 24, when stent 99 is expanded the three concentric ring structure of this embodiment facilitates additional branch wall support because a generally more dense pattern is created in branch portion 30 with the addition of another concentric ring.

*Please amend the last paragraph on page 22 and the first paragraph on page 23 as follows:*

[0075] Referring again to FIGS. 29- 31 32, protruding portion 137 may be configured to fit directly into an opening in the stent. As shown in FIG. 29, catheter 131 is advanced over a guidewire 133 and positioned proximal to the bifurcation. As shown in FIG. 30, the catheter is advanced until the protruding portion 137 of the balloon is positioned at the bifurcation. In one embodiment, protruding portion 137 protrudes outwardly from catheter 131 enough so that it actually comes into contact with the bifurcation, thus providing a method of alignment with the branch vessel 4. Finally, as shown in FIG. 31, shows that as the balloon 135 is expanded, it which simultaneously causes the stent to expand and branch portion 30 to be pushed toward the branch vessel 4. Upon inflation of the balloon, the herniated portion 137 expands and extends through the branch portion 30 toward the side branch to open the entrance of the occluded side branch artery. FIG. 32 shows a perspective view of the herniated balloon 135 extending along a main vessel axis 136.

*Please amend the first paragraph on page 40 as follows:*

[00108] ~~The present invention is directed to a~~ A stent for use in a bifurcated body lumen having a main branch and a side branch. The stent comprises a radially expandable generally tubular stent body having proximal and distal opposing ends with a body wall having a surface extending therebetween. The surface has a geometrical configuration defining a first pattern, and the first pattern has first pattern struts and connectors arranged in a predetermined configuration. The

*Application No. 10/644550*  
*Page 6*

*Amendment*  
*Attorney Docket No. S63.2H-12015-US01*

stent also comprises a branch portion comprised of a second pattern, wherein the branch portion is at least partially detachable from the stent body.